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(54) Activated carbon filter

(57) An activated carbon filter of flat mode of construction for use in a vapour removal hood is intended to avoid premature saturation of the carbon by residues and overcome the problem, present in a horizontally disposed filter, that suction effect in the filter centre can be greater than at the periphery. The filter comprises a frame (1), the internal space of which is subdivided into chambers by walls (4, 5) serving as air guide elements. The walls (4, 5), at least to both sides of a notional suction axis (A), are each arranged inclined in direction of the axis.

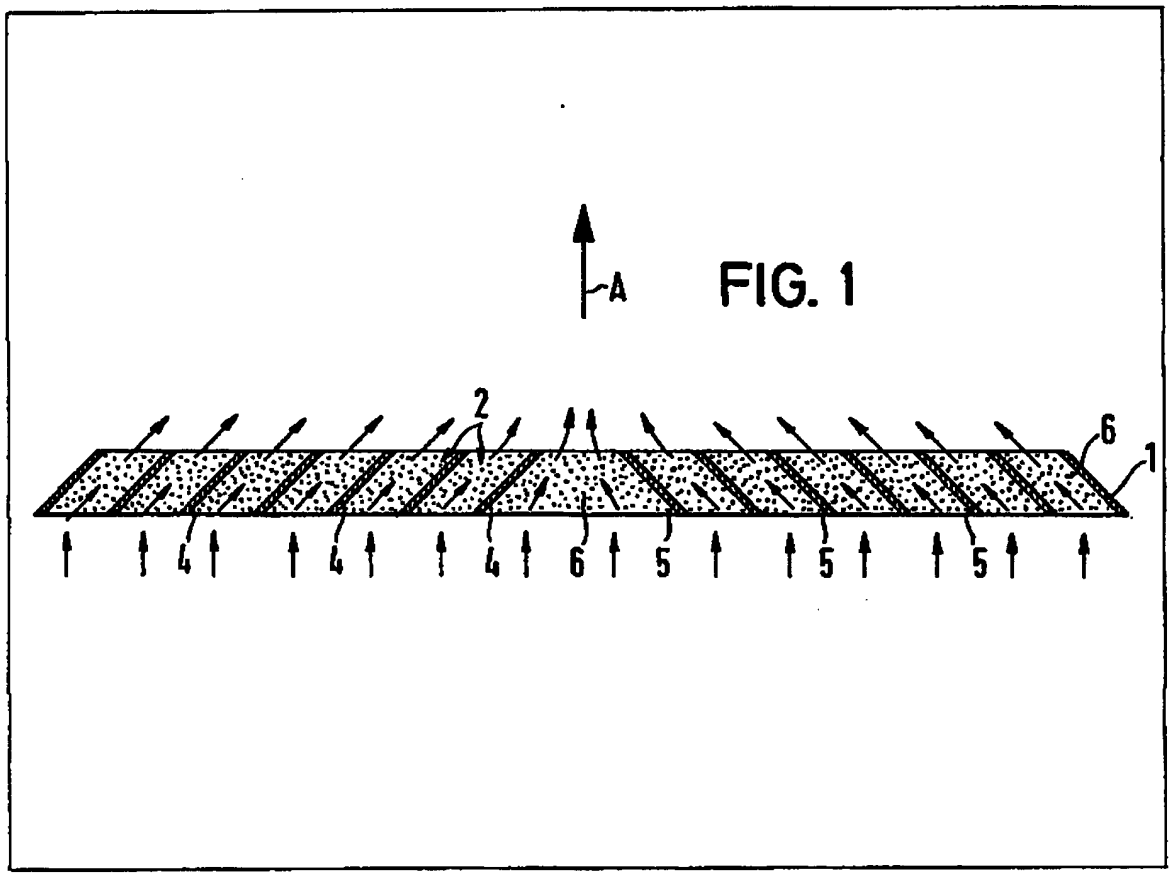

FIG. 1

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FIG. 1

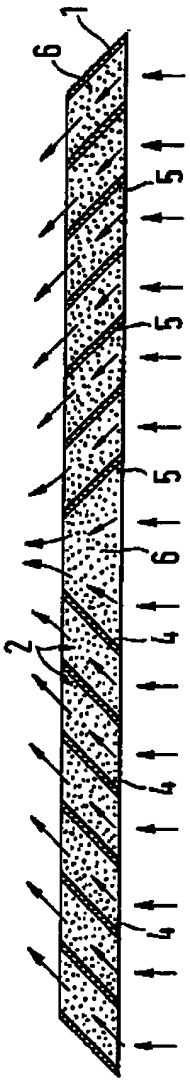


FIG. 3

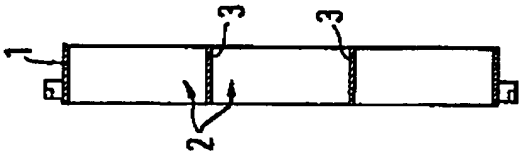
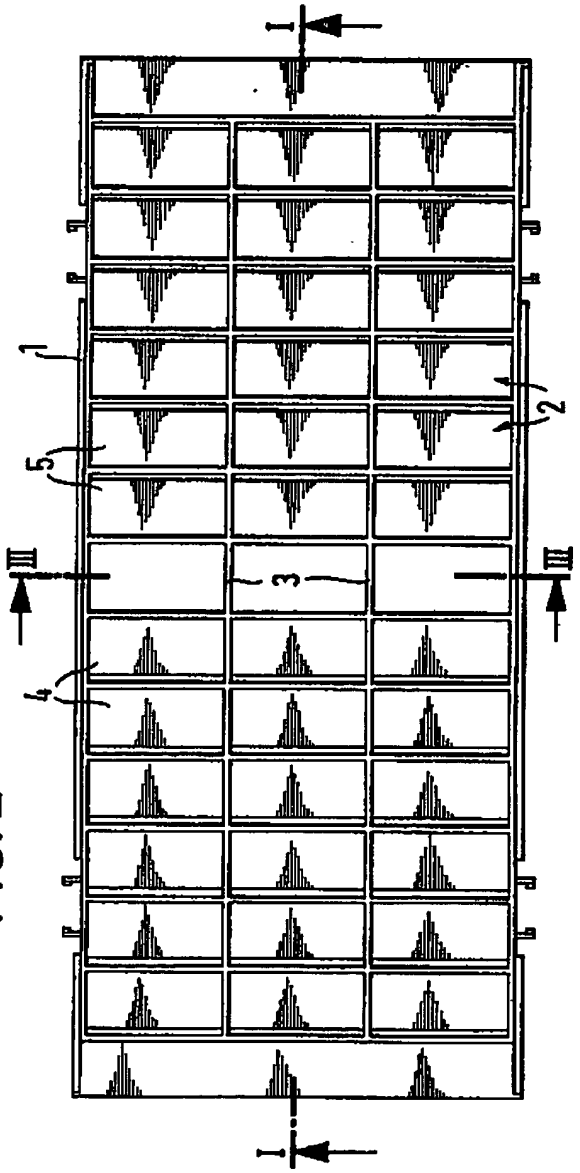


FIG. 2



SPECIFICATION

Activated carbon filter

The present invention relates to an activated carbon filter for a vapour removal hood.

In the case of a vertically standing, known activated carbon filter of large area (GB-PS 984 844), a flat frame is provided, the internal space of which is sub-divided into rectangular chambers by a plurality of walls, all the walls being arranged to be obliquely inclined in one direction. The chambers, which are at least partly filled by granular activated carbon, are covered at both sides by air-permeable covers. Through the oblique setting of the walls, the carbon fillings, which collapse due to the vertical setting, overlap at least in part so that carbon-free spaces are avoided. The problem exists, particularly in the case of horizontal activated carbon filters, that only relatively short flow paths are obtained within the activated carbon due to the flat mode of construction of the filter and that possibly in the case of centrally oriented suction in relation to the filter area, the greatest suction effect is present at the filter centre and strongly reduces towards the periphery of the filter, so that increasing deposition of vapour residues or condensate may occur in the edge region.

There is accordingly a need for an activated carbon filter in which relatively long flow paths through the carbon are obtained with enhanced flow or suction path conditions in the context of use in a vapour removal hood.

According to the present invention there is provided an activated carbon filter for a vapour removal hood, the filter comprising a flat frame for location in a substantially horizontal position, a plurality of flow guide walls arranged in the space enclosed by the frame to sub-divide the space into a plurality of flow passages open at both planar sides of the frame, activated carbon within the passages, and air permeable cover elements covering the passages at the planar sides, the walls in each of two regions disposed on opposite sides of a notional line which extends through said space perpendicularly to the planar sides being inclined in the direction of the line.

In a preferred embodiment of the invention, the filter comprises a flat, substantially horizontally lying frame, the internal space of which is subdivided by obliquely set walls into a plurality of chambers which are open at both sides, are filled by activated carbon and are closed off at both sides by air permeable covers. The walls bounding the chambers serve as air guide elements and, at least to both sides of a notional suction axis extending perpendicularly to the frame area, are each arranged inclined in direction of the suction axis. By virtue of the oblique setting of the walls, vapour, which is sucked in substantially perpendicularly to the frame area, is deflected at the walls and in that case must flow through a greater filling thickness than would be the case for completely vertical passages. Moreover, the walls respectively inclined in direction of the suction axis of the vapour removal hood blower have the effect that, within the activated carbon filter, a flow direction is predetermined or constrained, which even in the peripheral region of the filter effects good suction of gases cleaned at least to a large extent.

Optimisation of the suction effect of the filter may be achieved by arranging the walls at increasing angle of inclination with increasing distance from the suction axis.

An embodiment of the present invention will now be more particularly described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a longitudinal cross-section, on the line I–I of Fig. 1, of an activated carbon filter embodying the invention;

Figure 2 is a plan view of the filter according to Fig. 1; and

Figure 3 is a transverse cross-section of the filter on the line III–III of Fig. 2.

Referring now to the drawings, there is shown an activated carbon filter which comprises an outer flat frame 1, the internal space of which is open at both sides and is subdivided into a plurality of rectangular chambers 2 by walls 3, 4 and 5, the walls 3 extending perpendicularly to the walls 4 and 5 in plan view of the filter (Fig. 2). After installation of the filter in a vapour removal hood (not shown), the frame 1 is arranged substantially horizontally as illustrated in Fig. 1. The mean suction axis of a suction blower arranged downstream of the filter within the vapour removal hood is designated by the arrow A. This suction axis A extends perpendicularly to the general plane of the frame, as Fig. 1 clearly shows. The walls 4 and 5 to both sides of the suction axis are each arranged inclined towards the suction axis, i.e. the walls 4 and 5 are inclined in opposite directions. The chambers 2 bounded by the walls 3, 4 and 5 and by the frame 1 are filled with granular activated carbon. The mutually opposite open sides of the chambers 2 are covered by an air-permeable material, i.e. one permitting a flow. As indicated by flow arrows in Fig. 1, the inducted vapour flows at first substantially perpendicularly towards the frame area and is deflected in direction of the suction axis A at the walls 4 and 5 inclined towards the suction axis A. By virtue of this deflection, the inducted gases to be cleaned run through a relatively large filling thickness and are caused to flow in direction of the suction axis A, i.e. in direction of the suction blower, as is also indicated by arrows. An optimisation of the suction effect can be achieved if the inclination of the walls 4 and

5 has an increasing angle with increasing distance from the suction axis, so that the gas flow at the edge sides issues out of the activated carbon 6 at a flatter angle than the gas flow in the centre of the filter.

CLAIMS

1. An activated carbon filter for a vapour removal hood, the filter comprising a flat frame for location in a substantially horizontal position, a plurality of flow guide walls arranged in the space enclosed by the frame to subdivide the space into a plurality of flow passages open at both planar sides of the frame, activated carbon within the passages, and air permeable cover elements covering the passages at the planar sides, the walls in each of two regions disposed on opposite sides of a notional line which extends through said space perpendicularly to the planar sides being inclined in the direction of the line.

2. A filter as claimed in claim 1, wherein the walls in each region are arranged at an increasing angle of inclination with increasing distance from the line.

3. An activated carbon filter substantially as hereinbefore described with reference to the accompanying drawings.

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